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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
ANGEBRANNDT, MARTIN J	
ART UNIT	**PAPER NUMBER**
1756	

DATE MAILED: 11/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/652,016	CHISHOLM ET AL.	
	Examiner	Art Unit	
	Martin J. Angebranndt	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *8/30/2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13 and 15-23* is/are pending in the application.

4a) Of the above claim(s) *19-23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13 and 15-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-13 and 15-23* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. The response of the applicant has been read and given careful consideration. Responses to the arguments are presented after the first rejection to which they are directed.

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-13 and 15-18, drawn to a method of exposing a resorcinol arylate polyesters to 29-0400 nm light at a power of 1-20 mW/cm2, classified in class 430, subclass 269.

II. Claims 19-23, drawn to imaged articles in resorcinol arylate polyesters, classified in class 430, subclass 9.

The inventions are distinct, each from the other because of the following reasons:

3. Inventions group I and group II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the imaged articles are the result of Fries molecular rearrangement, which may be facilitated by irradiation using other wavelengths and/or powers and also the claimed process does not require a pattern to be formed, as it embraces uniform exposures

4. Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

5. Because these inventions are independent or distinct for the reasons given above and the inventions require a different field of search (see MPEP § 808.02), restriction for examination purposes as indicated is proper.

6. Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

7. During a telephone conversation with David E. Rodrigues (50,604) on March 15, 2006 a provisional election was made without traverse to prosecute the invention of group I, claims 1-18. Affirmation of this election must be made by applicant in replying to this Office action. Claims 19-23 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

8. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

9. The applicant confirms the election on page 5 of the response.

10. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 1-13 and 16-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim1 should recite - - forming a data pattern- - or - - -irradiating only a portion- - , which would make it congruent with the irradiated portion and unirradiated portion language later in the claim. This would not preclude further exposure or other portions, but it would obviate the rejection based upon a uniform exposure.

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claims 1-7,10,11,13 and 16-18 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Webb et al. '997.

The weatherability testing uses a xenon arc lamps with an irradiance of 0.77 W/m^2 (0.077 mW/cm^2) at 340 nm of films formed to a thickness of 60 microns. The exposure time was 160 minutes and a uniform exposure. See data in table 2. The Fries rearrangement of these materials is disclosed. (col 1).

In this case the unirradiated portion is prior to exposure as the "at least a portion" language embraces exposure of the entire film. Further, the fully cured medium is inherently able to be ablatively written upon (see GB 2222696 cited below) to form an imaged article. The claims do not limit the exposure to forming a pattern, using a mask or exposing only a portion of the photosensitive material. The claims could indicate that a refractive index pattern is formed. The rejection stands

16. Claims 1-8,10,11,13 and 16-18 are rejected under 35 U.S.C. 102(e) as being fully anticipated by Siclovan et al. '270.

The weatherability testing uses a xenon arc lamps with an irradiance of 0.77 W/m^2 (0.077 mW/cm^2) at 340 nm of films formed into a film. The exposure time was 160 minutes and a uniform exposure. See data in table 10.

The rejection stands for the reasons above without further comment as no further arguments were directed at this rejection.

17. Claims 1-8,10-14 and 16-18 are rejected under 35 U.S.C. 102(e) as being fully anticipated by Siclovan et al. '253.

The weatherability testing uses a xenon arc lamps with an irradiance of 0.77 W/m^2 (0.077 mW/cm^2) at 340 nm of films formed into a film. The films are 25.4 microns thick and formed on a glass substrate. See data in table I. . The Fries rearrangement of these materials is disclosed. (col 1).

The rejection stands for the reasons above without further comment as no further arguments were directed at this rejection.

18. Claims 1-7,9-13 and 16-18 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Cohen et al. "Transparent ultraviolet-barrier coatings", J. Polymer Sci. Pt A-1 Vol. 9 pp. 3263-3299 (1971).

Cohen et al. "Transparent ultraviolet-barrier coatings", J. Polymer Sci. Pt A-1 Vol. 9 pp. 3263-3299 (1971) specifies on page 3265, that the polyesters are formed as films on substrates, that the low intensity exposures with the 100 W lamp have an irradiance of 0.71 mW/cm^2 between 200 and 400 nm and the high intensity exposures using the 450 W lamp have an irradiance of 13 mW/cm^2 between 200 and 400 nm. (As the range of interest in the claims is 290-400, the irradiance in this region for the high intensity exposure is about 7 mW/cm^2.) The use of polymers including resorcinol is disclosed. (structure II on page 3266). Polyester 17 on page 3267 is embraced by formula XII in claim 2. (see also table IIB on page 3272) The rearranements of the polymers is disclosed on page 3264 (middle paragraph) and on pages 3280-3293. Figure 3 on page 3282 describes a resorcinol-iso/terephthalate polymer with a thickness of 0.4 mil. (10.16 microns) and similarly figure 6 shows the same for resorcinol-diphenolic acid-butylester-iso/terephthalate. Note also the data in figure 7 showing the effects of continued exposure as well as the data for the other polymers including polyester 17. Clearlty from figure 7, the onset of the rearrangement begins almost immediately and does not begin to slow until nearly 20 minutes of exposure has taken place. (7 mW times 20 (min) times 60 (sec/min) yields a total exposure of about 8500 mJ/cm^2).

The rejection stands for the reasons above without further comment as no further arguments were directed at this rejection.

19. Claims 1-13 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gillberg-Laforce et al., '223, in view of Cohen et al. "Transparent ultraviolet-barrier coatings", J. Polymer Sci. Pt A-1 Vol. 9 pp. 3263-3299 (1971).

Gillberg-Laforce et al., '223 teaches the formation of holograms using polymers undergoing photo induced fries rearrangements to form patterns of refractive index modulations. The use of polymers containing isopthahlates is disclosed in column 3. The sensitivity of these is in the 200-500 nm range and the refractive index modulations can be up to 0.05. The use of films of thicknesses of 0.5-20 microns is disclosed. (3/57-4/2). The use of exposures of 100mJ/cm^2 is disclosed. The use of lasers is disclosed (4/7-17) and the use of contact exposure through a grating mask with light in the 254-315 nm range is disclosed in example II. In example 1, the 1000 mJ/cm^2 appear to be delivered over 75 seconds (the longest time period in the table in column 5), which results in an exposure at 13.3 mW/cm^2. (Within the range 290-315, the exposure would be about 7.5 mW/cm^2.) and results is a refractive index change in a the Durel polymer. Example IV, the uses 25 mW of the 300 nm output of an argon ion laser in a two minute exposure to produce a grating in Durel.

It would have been obvious to one skilled in the art to modify the teachings of Gillberg-Laforce et al., '223 by using other materials known to undergo Fries rearrangements under the influence of low intensity UV exposure such as the resorcinol polyesters disclosed by Cohen et al. "Transparent ultraviolet-barrier coatings", J. Polymer Sci. Pt A-1 Vol. 9 pp. 3263-3299 (1971) with a reasonable expectation of forming a holographic image which does not yellow/discolor.

The applicant argues that there is no motivation for the substitution of the polymers. The examiner disagrees, noting that the second structure shown on page 3267 is identical to the phenyl acylate shown in Gillberg-Laforce et al., '223 at column 3/line 20, so the equivalence is recognized in the art, further the effect of light in inducing the Fries rearrangements are taught in both Gillberg-Laforce et al., '223 and Cohen et al. "Transparent ultraviolet-barrier coatings", J. Polymer Sci. Pt A-1 Vol. 9 pp. 3263-3299 (1971) and the change in chemical structure from the Fries rearrangement inherently would result in refractive index change. (it is a different compound). The refractive index modulation would be expected to be similar to that observed in Gillberg-Laforce et al., '223 which is up to about 0.05 (3/60-62). The photosensitivity of the resorcinol acylates is demonstrated in figure 5 of Cohen et al. "Transparent ultraviolet-barrier coatings", J. Polymer Sci. Pt A-1 Vol. 9 pp. 3263-3299 (1971). The resorcinol uses polyol II rather than polyol I shown on page 3266 of of Cohen et al. "Transparent ultraviolet-barrier coatings", J. Polymer Sci. Pt A-1 Vol. 9 pp. 3263-3299 (1971), so there is a reasonable expectation of success in forming a patterned exposure based upon the changes in the materials using polymers, which inherently would include a refractive index change in addition to the absorption changes derived from either of these polyols based upon the changes due to exposure evidences in the figures. The rejection stands.

The applicant is invited to provide a declaration including comparative data vs the compositions used by Gillberg-Laforce et al., '223 to obviate this rejection.

20. Claims 1-13 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gillberg-Laforce et al., '223, in view of either of (Webb et al. '997 or Siclovan et al. '270)

combined with Cohen et al. "Transparent ultraviolet-barrier coatings", J. Polymer Sci. Pt A-1 Vol. 9 pp. 3263-3299 (1971).

It would have been obvious to one skilled in the art to modify the teachings of Gillberg-Laforce et al., '223 by using other materials known to undergo Fries rearrangements under the influence of low intensity UV exposure such as the resorcinol polyesters disclosed by either Webb et al. '997 or Siclovan et al. '270 with a reasonable expectation of forming a holographic image which does not yellow/discolor based upon resorcinol arylenes being known to undergo Fries rearrangements under the influence of low intensity UV exposure as evidenced by Cohen et al. "Transparent ultraviolet-barrier coatings", J. Polymer Sci. Pt A-1 Vol. 9 pp. 3263-3299 (1971).

The applicant argues that the a uniform exposure of the secondary references teach away from the patterned exposure of Gillberg-Laforce et al., '223. The examiner disagrees for the reasons above, noting that all the references describe light induced Fries rearrangements, which in changing the chemical structure inherently would result in refractive index changes and the equivalence set forth in Cohen et al. "Transparent ultraviolet-barrier coatings", J. Polymer Sci. Pt A-1 Vol. 9 pp. 3263-3299 (1971). The rejection stands.

21. Claims 1-13 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gillberg-Laforce et al., '223, in view of either of (Webb et al. '997 or Siclovan et al. '270) combined with Cohen et al. "Transparent ultraviolet-barrier coatings", J. Polymer Sci. Pt A-1 Vol. 9 pp. 3263-3299 (1971), further in view of Kuwayama et al. JP 63-287986.

Kuwayama et al. JP 63-287986 teaches that to prevent yellowing of holograms a UV protective coating can be used.

In addition to the basis above, the hologram recording layer resulting from the combination Gillberg-Laforce et al., '223, in view of either of (Webb et al. '997 or Siclovan et al. '270) combined with Cohen et al. "Transparent ultraviolet-barrier coatings", J. Polymer Sci. Pt A-1 Vol. 9 pp. 3263-3299 (1971) is known to resistant to yellowing, so there would be no need to add and additional layer to prevent yellowing as is known in the holographic arts.

The rejection stands for the reasons above.

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

GB 2222696 teaches the use of UV laser light to ablatively write grating patterns in polycarbonate (page 2)

23. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

24. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebranndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Martin J Angebranndt
Primary Examiner
Art Unit 1756

11/03/2006